Site Investigation Work Plan

Submitted to

Modine Manufacturing Company

June 2006

Prepared by

CH2MHILL

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CH2MHILL

June 15, 2006

Christine Kump.
Environmental Engineer
Missouri Department of Natural Resources
St. Louis Regional Office
7545 S. Lindbergh, Suite 210
St. Louis, MO 63126-4839

Subject: Site Investigation Work Plan
Modine Manufacturing Company
Camdenton, Missouri

Dear Ms. Kump:

Please find enclosed a Site Investigation Work Plan that CH2M HILL is submitting on behalf of Modine Manufacturing Company. The Work Plan summarizes the investigation activities associated with collection of soil samples from beneath the manufacturing building. Please feel free to call Tom Sanicola (262-636-1649) or me (314-421-0313 Ext. 265) with any questions you may have.

Sincerely,

CH2M HILL

Daniel J. Price, R.G.
Project Manager

stl\MDNRcoverletter.doc

c: Thomas Sanicola - Modine Manufacturing Company
Bob King - Modine Manufacturing Company
Steven Poplawski - Bryan Cave LLP
Richard Nussbaum - Missouri Department of Natural Resources
Don Van Dyke - Missouri Department of Natural Resources
David Garrett - EPA Region VII

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Contents

1.0 Introduction

This Work Plan outlines the objectives, approach, and procedures for conducting a subsurface soil investigation beneath the existing manufacturing building at Modine Manufacturing Company, 221 Sunset Drive Camdenton, Missouri. A site location map is provided as Figure 1. The site investigation procedures described in this Work Plan will be managed by CH2M HILL on behalf of Modine to comply with Missouri Department of Natural Resources (MDNR) correspondence dated April 7, 2006.

1.1 Background

A meeting was held between MDNR and Modine to discuss site progress and any future site activities on August 16, 2005. The meeting resulted in an agreement between Modine and MDNR that a historical summary of the past site activities and additional information on indoor air be submitted to MDNR. The document, *Comprehensive Historical Summary Document Modine Manufacturing Company Camdenton, Missouri Facility* was submitted to MDNR in December, 2005. A letter from MDNR, dated April 7, 2006, responding to the historical summary provides the basis of this work plan.

1.2 Objectives

The primary objective of the activities presented in this Work Plan is to address additional investigation requirements put forth the in the MDNR correspondence provided on April 7, 2006 with regard to additional site investigation beneath the building. The Health and Safety Plan (HSP) prepared for field work at the Modine facility has been updated to address potential health and safety issues associated with site investigation activities included in this Work Plan. The updated HSP is presented in Attachment 1. The approach for meeting project objectives during the site investigation is described below.

1.3 Approach

A subsurface investigation beneath the building will be completed to assess potential soil contamination in the areas of the Former Mudpits 3 and 4 (SWMU 2) and the Former Monorail Vapor Degreaser and Still M567 (SWMU 26) as related to contamination identified by past site activities and as part of previously identified indoor air sampling results. See Figure 2 for the location of the SWMUs. One (1) 200 foot horizontal boring will be advanced beneath the building floor so that four (4) discreet soil samples can be collected. Specific soil sample locations are shown on Figure 2. The four proposed sampling locations have been selected to address areas of MDNR concern as discussed in the April 7, 2006 correspondence. The first of the four samples will be collected in the vicinity of the Former Mudpits 3 and 4 (SWMU 2) and the remaining three samples will be collected in the vicinity of the Former Monorail Vapor Degreaser and Still M567 (SWMU 26).

2.0 Scope of Work

This section provides the tasks to be performed and the field procedures that will be followed during the completion of one horizontal boring to be advanced beneath the manufacturing building.

2.1 Pre-investigation Activities

A foundation construction plan of the manufacturing building will be provided to the horizontal drilling subcontractor. With the assistance of Modine facility personnel, the exact boring path and depth will be planned in order to avoid any potential subsurface building structures (utilities, etc.).

Before conducting drilling activities, Modine facility personnel will assist Missouri One-call in locating utilities in the boring vicinity. Horizontal drilling activities will not begin until utilities have been clearly marked. Vacuum extraction equipment will be used to clear utility locations before horizontal drilling activities begin. After utilities have been located and cleared, the exact horizontal boring path will be determined and tracked by the subcontractor from the interior of the manufacturing building.

2.2 Horizontal Boring Activities

The horizontal boring will be advanced with a CME 500 DD horizontal directional drilling rig with a three man crew. The horizontal drilling rig is rotary type drilling operated with Bio Bore which is a biodegradable drilling rig fluid. During operation, the Bio Bore will circulate through the drill rig removing soil cuttings and will accumulate in a collection tank. The Bio Bore will be vacuumed out of the collection tank and will be properly disposed of when drilling activities are complete.

The CME 500 DD horizontal directional drilling rig will be stationed approximately 30 feet west of the manufacturing building. The horizontal boring will begin at grade level and will initially be advanced in a diagonal direction. The slope of the diagonal will be approximately 1 ½ feet of drop per 10 foot of horizontal distance, resulting in a depth of approximately 4.5 feet below grade at the west wall of the manufacturing building. The boring will be advanced in a diagonal direction until the determined depth for the boring path is reached (approximately 6 feet below grade). Once the determined depth is reached, the boring will be advance horizontally along the planned path underneath the manufacturing building. The planned path will be tracked from the interior of the manufacturing building.

2.3 Subsurface Sampling

The four proposed sampling locations have been selected to address areas of MDNR concern as discussed in the April 7, 2006 correspondence. The first of four will be collected

in the vicinity of the Former Mudpits 3 and 4 (SWMU 2) and the remaining three will be collected in the vicinity of the Former Monorail Vapor Degreaser and Still M567 (SWMU 26).

The horizontal boring will be advanced along the planned path and depth until the first sampling location is reached. This location will be determined by tracking procedures conducted in the interior of the manufacturing building. Once it is determined that a proposed sampling location is reached, the drilling rods will be removed from the horizontal borehole. A split spoon sampling device will be inserted in borehole and will be pushed into the native soil at the proposed sampling location. The sample and the split spoon sampling device will be extracted from the borehole, and the drilling rods will be reinstalled to continue the advancement of the horizontal boring. The sampling procedure will be repeated until all four proposed samples are collected.

Upon completion, the 6-inch diameter borehole will be grouted with high solids bentonite grout or with concrete as specified by Modine facility personnel. After the borehole has been grouted, soil will be placed in the upper two feet of the borehole and compacted to bring the surface back to grade. The surface will be repaired with materials similar to those covering the surrounding area.

Field documentation of the site investigation activities will be recorded in a logbook. Photographs will also be taken during the site investigation for documentation purposes.

2.4 Investigation Derived Waste

Soil cuttings will be removed from the horizontal boring via circulation of the Bio Bore. The soil-laden Bio Bore will be vacuumed out of the collection tank and containerized for proper future disposal based on characterization analysis. CH2M HILL will collect a single sample from the containerized material for disposal characterization by a contract laboratory.

2.5 Site Restoration

The site will be returned to its original condition after completion of the horizontal boring and soil sampling activities. Following the completion of work at the site, all drums, trash, and other waste, excluding the soil stockpile, will be removed to the designated staging area for disposal.

2.6 Site Investigation Summary Report

Following completion of site investigation activities and receipt of final analytical reports from the laboratory, CH2M HILL will prepare a report that summarizes the excavation activities and results. The report will consist of a discussion of the horizontal drilling activities, laboratory analytical results from the characterization sampling, and CH2M HILL conclusions. Field documentation, photographs, and laboratory reports will be included as attachments or appendices. A site map figure will also be included that depicts the extent of the horizontal boring and the sampling locations underneath the manufacturing building.

3.0 Sample Handling and Laboratory Analysis

This section is designed to provide direction with regard to sample handling and laboratory analysis during the Site Investigation at Modine.

3.1 Sampling Equipment Decontamination Procedures

All equipment that may directly or indirectly contact samples will be decontaminated in a designated decontamination area. Accumulated decontamination water will be disposed via the on-site Modine wastewater treatment system.

For hand-held sampling devices, the following procedures will be used to decontaminate the equipment. The equipment will be scrubbed with a solution of potable water and Alconox, or equivalent laboratory-grade detergent. The equipment will then be rinsed with copious quantities of potable water followed by an ASTM Type II Reagent Water.

For the split spoon sampling device advanced by the horizontal drilling rig, the following procedures will be used for decontamination between samples. The external surfaces of the sampling equipment will be washed with high-pressure hot water wash and if necessary, scrubbed until all visible dirt, grease, oil, etc., have been removed. The sampling equipment will be rinsed with potable water.

3.2 Sample Management Procedures

During the Site Investigation, a consistent sample identification system will be employed to ensure uniqueness and clarity in sample names. The samples collected along the extent of the horizontal boring will be designated as follows – the sample from point that is 50 feet of the total 200 foot boring extent will be labeled MO-HB-100' (MO-Modine, HB-horizontal boring, 100'-100 feet of 200 foot total).

Procedures to ensure the custody and integrity of the samples begin at the time of sampling and continue through transport, sample receipt, preparation, analysis and storage, data generation and reporting, and sample disposal. Records concerning the custody and condition of the samples are maintained in field and laboratory records. Chain-of-custody records will be maintained for all field and field QC samples. All sample containers will be sealed in a manner that will prevent or detect tampering if it occurs.

3.3 Laboratory Analysis

Soil samples will be submitted to a contract laboratory for VOC analyses (Method 8260). Test America has been tentatively selected as the analytical laboratory. Samples will be shipped to the analytical laboratory on a daily basis as collected.

3.4 Quality Control Samples

Quality Control (QC) samples will be collected during the sampling portion of the Site Investigation to evaluate precision and bias during field activities and subsequent laboratory analysis. QC samples will consist of one field duplicate and trip blanks.

3.4.1 Field Duplicates

A field duplicate sample is a second sample collected at the same location as the original sample. Duplicate samples are collected simultaneously or in immediate succession, using identical recovery techniques, and treated in an identical manner during storage, transportation, and analysis. A field duplicate will be collected at a frequency of approximately 25 percent. Based on the proposed horizontal boring and sampling locations, we anticipate collection of four soil samples. One duplicate sample will be collected during the advancement of the horizontal boring.

3.4.2 Trips Blanks

The trip blank consists of a VOC sample vial filled in the laboratory with ASTM Type II reagent grade water, transported to the sampling site, handled like an environmental sample and returned to the laboratory for analysis. Trip blanks are not opened in the field. Trip blanks are prepared only when VOC samples are taken and are analyzed only for VOC analytes. Trip blanks are used to assess the potential introduction of contaminants from sample containers or during the transportation and storage procedures. One trip blank will accompany each cooler of samples sent to the laboratory for analysis of VOCs. Therefore, we expect that three trip blanks will be required, one for each day of sample collection.

3.5 Quality Assurance Project Plan (QAPP)

To provide continuity with data collected during the previous activities at the site, the QAPP from Dames and Moore's *RCRA Facility Investigation Work Plan, Modine Manufacturing Company, Camdenton, Missouri* (Dames and Moore, 1999) will be used for this investigation.

4.0 Project Schedule

The Project Schedule, summarized below, assumes that field activities will not be interrupted by inclement weather or other unforeseeable delays.

Mobilization to the field will occur within two weeks of receipt of approval of this Work Plan from the MDNR.

Field activities are anticipated to be completed in five working days.

Analytical results are anticipated to be available in 4 weeks.

Site Investigation Summary Report will be submitted to the MDNR within four weeks of receipt of the analytical data from the laboratory.

Assuming there are no delays, the total time required from commencement of the work through submittal of the Site Investigation Summary Report will be approximately 10 weeks.

5.0 Project Organization

This site investigation project will be coordinated by Modine. The Modine individuals directly involved with the management of the project will be Mr. Thomas Sanicola, an environmental engineer with Modine's corporate office in Racine, Wisconsin and Mr. Bob King, the Quality/ Environmental Manager with the Modine facility in Camdenton, Missouri. Modine has selected CH2M HILL as the consultant for the project.

5.1 CH2M HILL Team

CH2M HILL roles and responsibilities have been identified for the implementation of this workplan at Modine Manufacturing Facility and are presented below:

The Project Manager will be Mr. Dan Price. Mr. Price has been involved with the activities at the site since 1995. He has approximately 18 years experience in the environmental industry and is a Registered Geologist in the State of Missouri.

The Field Engineer/Scientist will be a qualified individual experienced in conducting environmental drilling oversight. This individual will be responsible for directing the drilling subcontractor, collection of soil from four sampling locations, and communication with the on-site Modine representative and the Project Manager.

5.2 Subcontractor

Modine and CH2M HILL have selected the following subcontractor to assist in completing this project.

MATECO Drilling Company of Rockford, Michigan has been selected as the horizontal drilling contractor. MATECO personnel assigned to the project will have the appropriate health & safety training (HAZWOPER). MATECO will be responsible for the advancement of the horizontal boring, sample extraction, and site restoration.

Test America located in Nashville, Tennessee has tentatively been selected as the contract analytical testing laboratory. Samples will be delivered to 2960 Foster Creighton Drive, Nashville, Tennessee 37204 under chain-of-custody for analysis.

6.0 References

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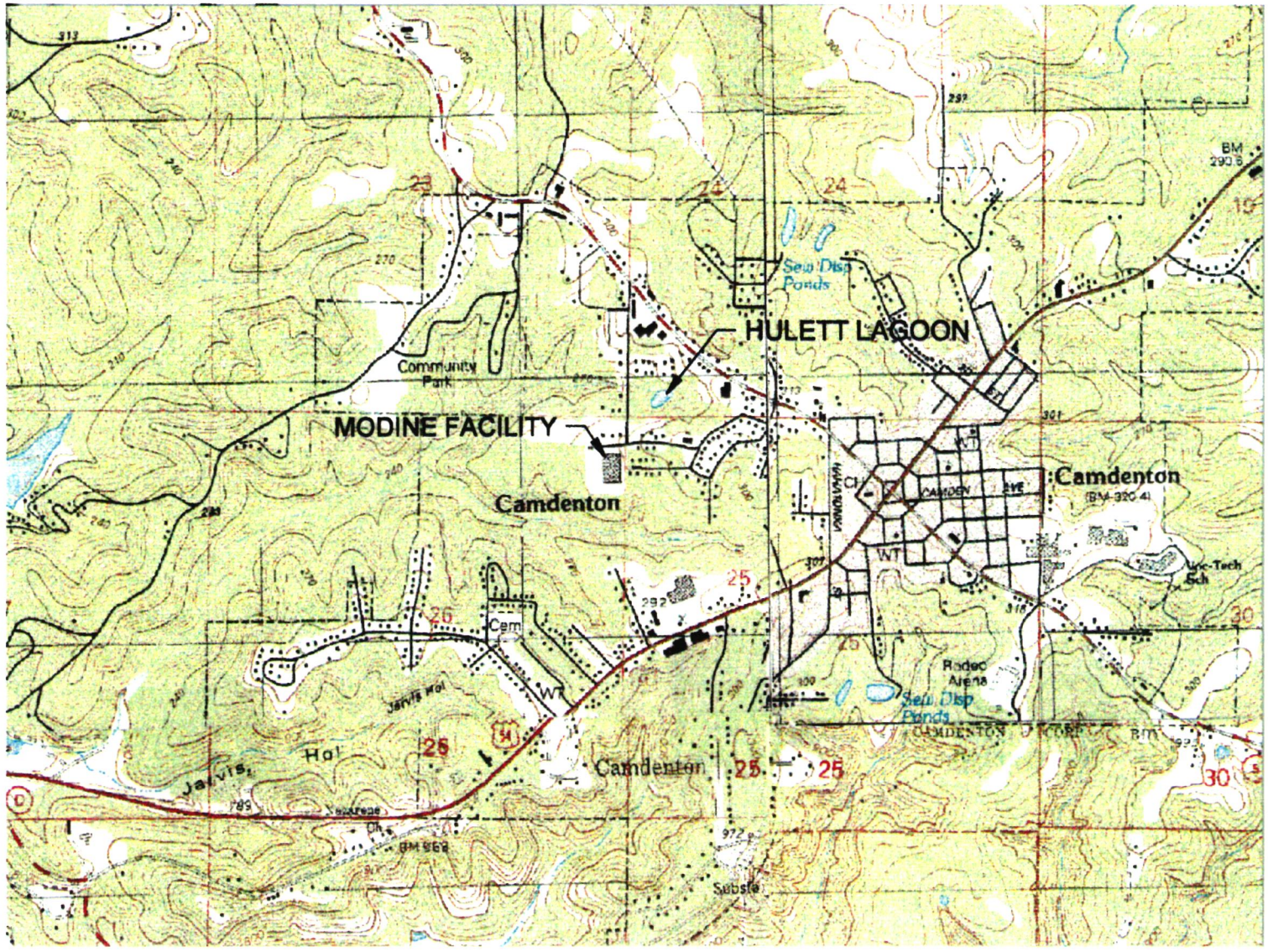

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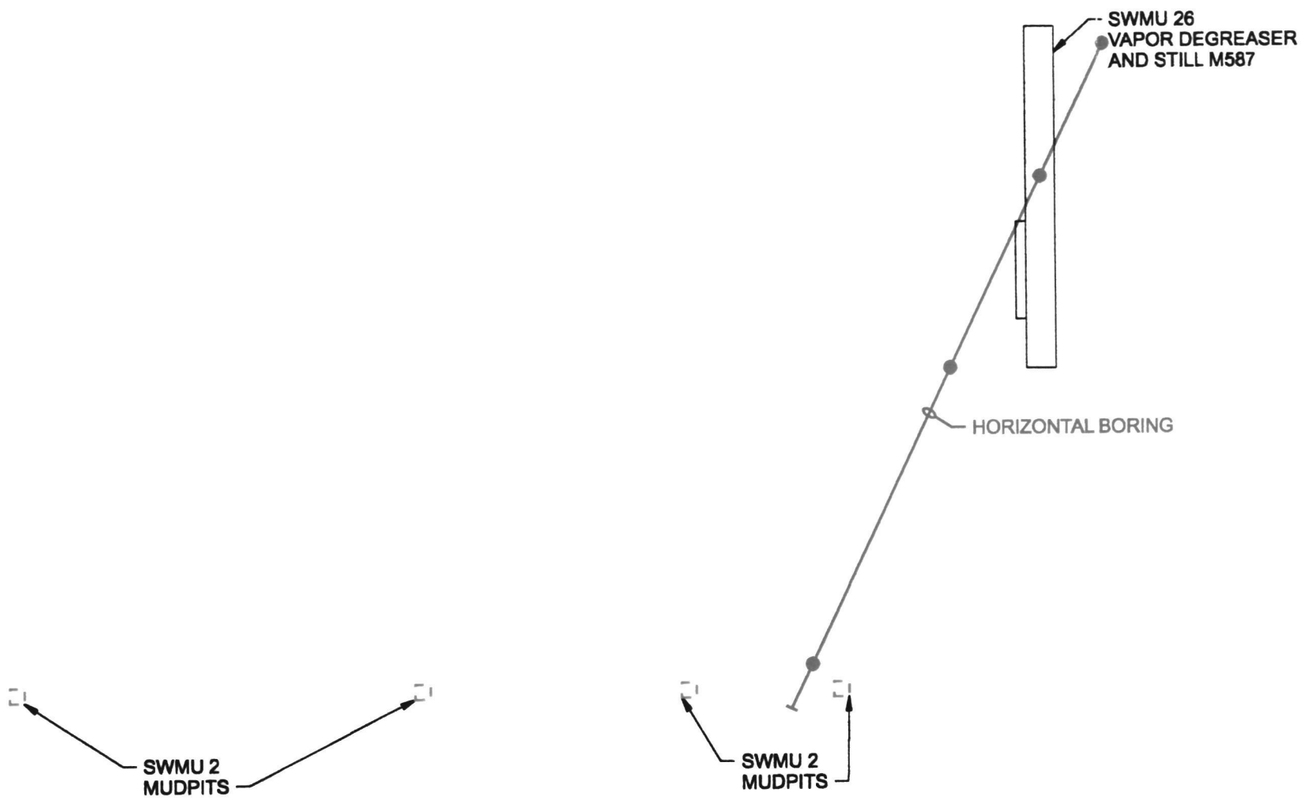
FIGURE 1
SITE LOCATION MAP
MODINE MANUFACTURING COMPANY
CAMDENTON, MISSOURI

CH2MHILL



LEGEND

SWMU

PROPOSED SAMPLING LOCATION

FIGURE 2
PROPOSED HORIZONTAL BORING WITH FOUR SAMPLING LOCATIONS
MODINE MANUFACTURING COMPANY
CAMDENTON, MISSOURI
CH2MHILL

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